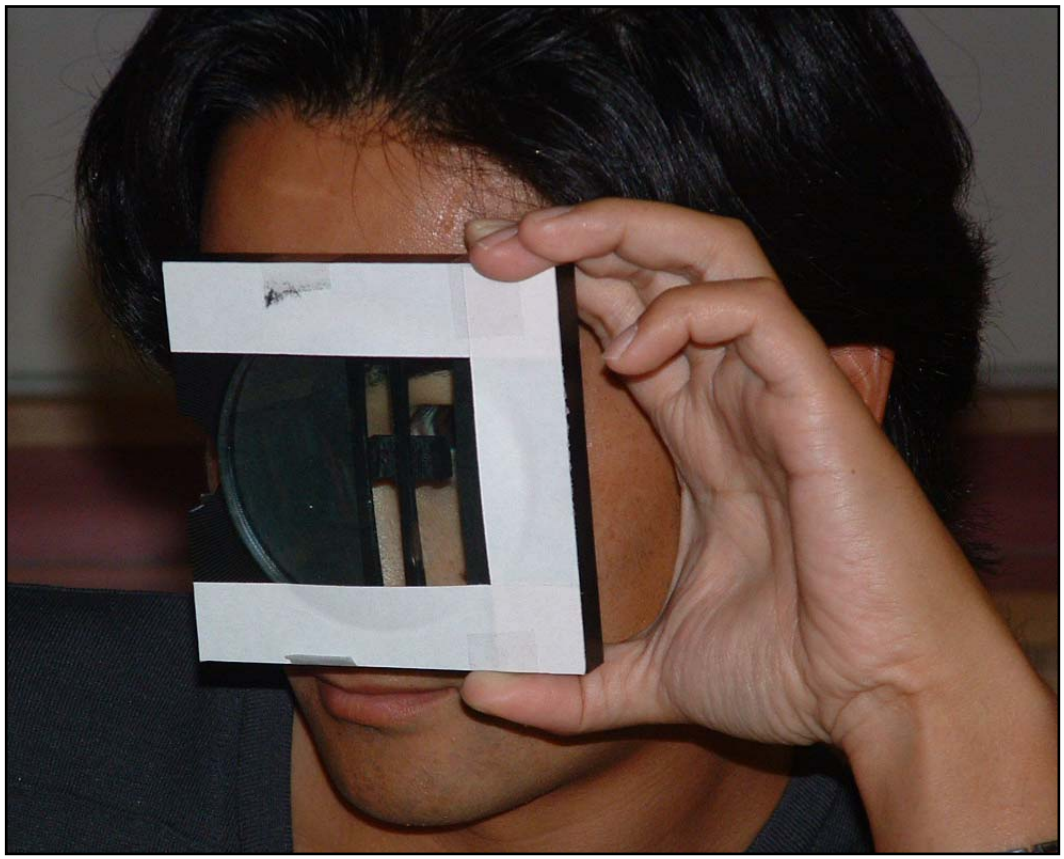
Assessing Astronaut Alertness and Fatigue
Using the Eye to Evaluate the Brain Stem

Vertical Vergence Measurement



All Photos Courtesy of Alfredo Sadun, M.D., Ph.D.

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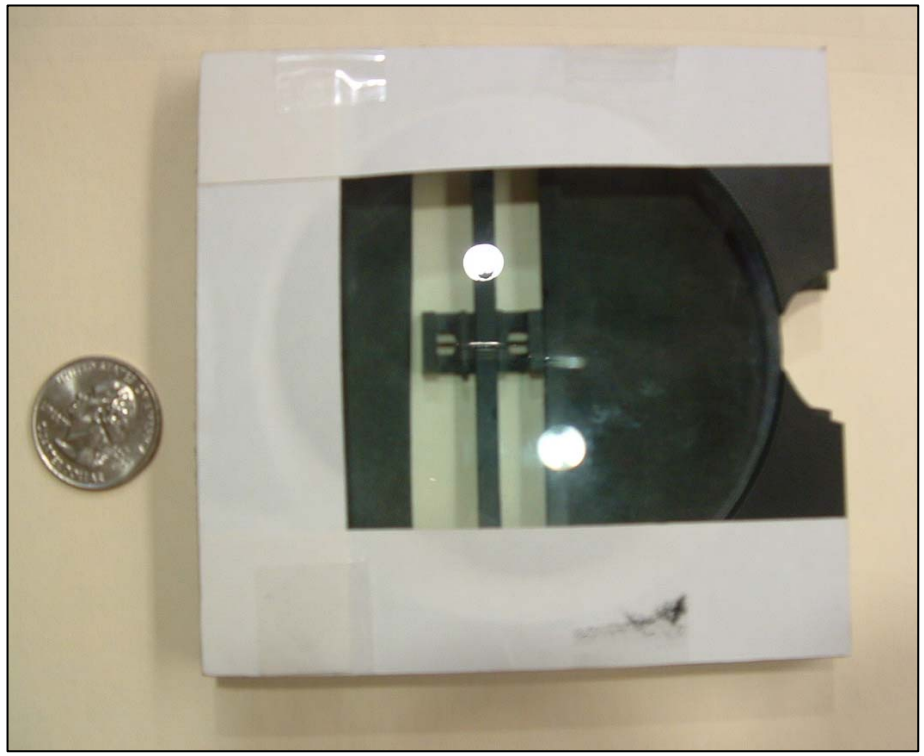
Vertical Vergence Measurement *is a*

simple,
rapid,
reproducible means of testing oculomotor function (cranial nerve III) as an index of alertness/fatigue.

It involves testing the superior rectus function, which may provide an easily quantifiable index, perhaps in conjunction with the eye droop phenomenon.



(*right*) The VVA device

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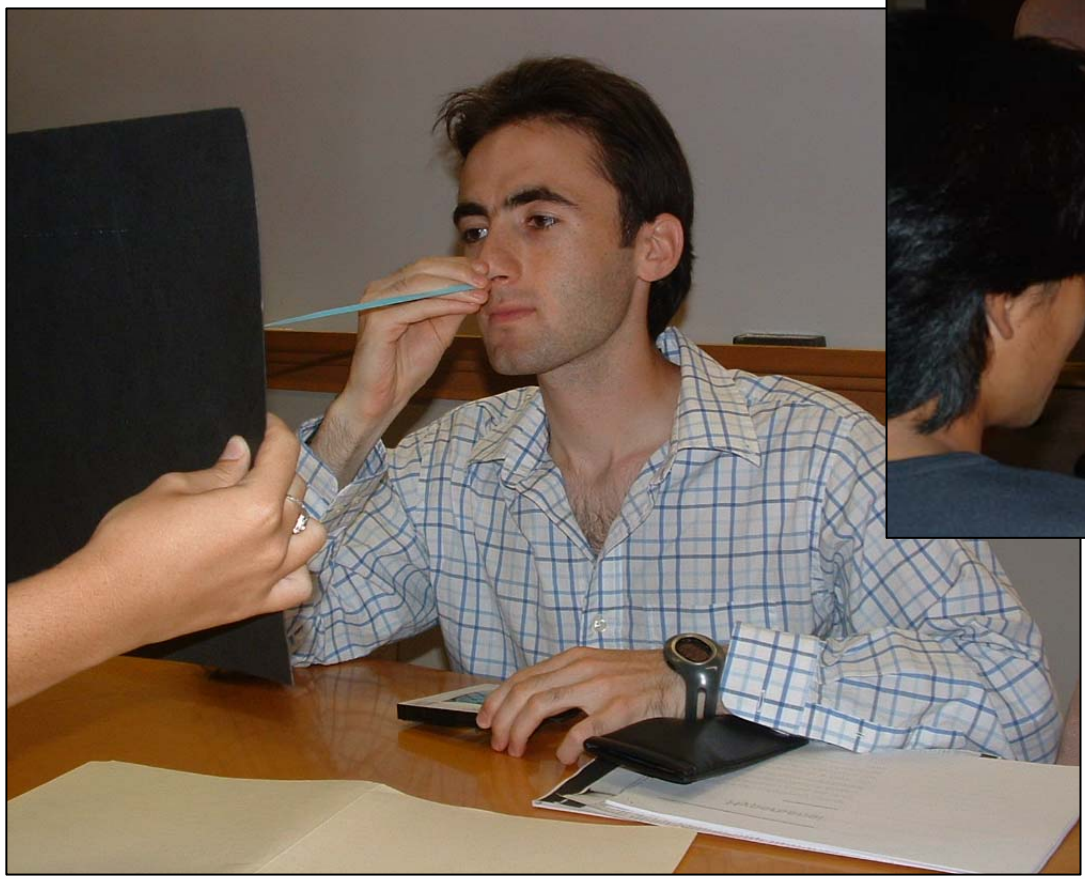

Subjects sitting 0.5 meters (measured) from a white bar on a black card held by the tester

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Vertical Vergence Measurement

Subject staring at the white bar through a VVA device; the tester asks the subject to try and fuse the two images split by the *Prentice rule prism effect*.

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